



WEEKLY OVERSIGHT REPORT

CH2MHILL

Weekly Summary Report USEPA Oversight, Sauget Area 1, Sauget, IL WA No. 239-RSBD-054V / Contract No. 68-W6-0025

Week Ending Friday, October 8, 2004

This report summarizes the Remedial Investigation/Feasibility Study (RI/FS) fieldwork conducted by Monsanto, Solutia, and their contractors from October 5 through October 8, 2004 at Sauget Area 1 Sites. The current RI/FS work consists of a dense non-aqueous phase liquid (DNAPL) Characterization and Remediation Study. CH2M HILL provided field oversight on four days during the week.

Contractors Onsite

- Golder Associates (consultant for Monsanto/Solutia)
- Groundwater Services Inc. (consultant/contractor to Monsanto/Solutia for the DNAPL Characterization and Remediation Study)
- Philip Environmental (support subcontractor to Groundwater Services Inc.)
- Prosonic Corporation (drilling subcontractor to Groundwater Services Inc.)

Work Performed This Week

Groundwater Services Inc. (GSI) and Prosonic Corporation (Prosonic) were onsite during the week conducting work for Task 4 of the DNAPL Characterization and Remediation Study Work Plan (GSI, April 2004), Soil Sampling and Installation of Piezometers. Golder Associates (Golder) was onsite during the week managing fieldwork on behalf of Monsanto/Solutia. During the week four soil borings were drilled and bedrock piezometers were installed.

Soil Boring / Installation of Piezometers

Prosonic drilled soil borings and installed piezometers into bedrock cores at four locations during the week. The work was conducted under the direction of GSI on behalf of Solutia/Monsanto.

Soil borings were drilled and piezometers installed at the following locations during the week:

- A1-12, downgradient of Site I
- A1-6, at Site I
- A1-1, at Site H
- A1-5, between Sites H, L, and G

Prosonic used sonic technology to drill the soil borings at Sauget Area 1. A 4-inch core barrel was utilized to advance the boring and collect samples. Subsequently, a 6-inch override casing was advanced to support the borehole. Additionally, a 7-inch override casing was used in the waste/fill areas to isolate the waste. Boreholes were drilled five feet into competent bedrock and continuously screened for the presence of non-aqueous phase liquid (NAPL).

Soil Logging and Field DNAPL Screening Tests

Soils were logged, continuously sampled and tested during drilling operations. Each 10-foot core was examined using the following field measures:

- Visual and olfactory observations to log soil and geologic conditions and to visually screen for the presence of NAPL
- Head-space analysis of each 2½-foot interval of core using a Photoionization Detector (PID) to screen for organic vapors
- Sudan dye soil testing vials, which indicates the presence of oil in the tested volume of soil
- FLUTE™ strips, a dye-impregnated colored ribbon, directly applied to the soil core, which visually indicates the presence of NAPL

The field screening results and observations are summarized in Table 1.

Boring A1-12, which is downgradient of the fill area at Site I but within the extent of the aqueous phase plume from the site, was drilled on October 5. At this boring, elevated PID readings were found at some intervals, together with a slight odor, but no visual indication of NAPL was observed.

Within the fill area of Site I, boring A1-6 was advanced on October 6. This location is approximately 180 feet south-southeast of piezometer A1-8, where residual NAPL was observed during drilling on September 22. Similarly, a dark brown or black oily material and sheen was observed within the waste encountered at boring A1-6, largely up to a depth of 35 feet below ground surface (bgs). The waste encountered at the boring included wood debris, metal wire, and brick fragments. Coupled with the visual observations, elevated PID measurements and an odor were observed at A1-6.

Borings A1-1 and A1-5 were advanced on October 7 and 8, respectively. The field screening of the soil cuttings at these two locations did not indicate the presence of NAPL. Within the waste interval at boring A1-1 (Site H), materials observed included numerous small pellets.

Soil Sampling

GSI collected one soil sample from each 10-foot interval of soil core to be submitted for laboratory analysis of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total organic carbon (TOC). Each 10-foot soil core was sectioned into 2½-foot intervals, with criteria aimed to select the interval for analyses based on the results of the field screening with preference to more potentially impacted intervals. Chemical analyses of soil samples will be conducted by Severn Trent Laboratories in Savannah, Georgia.

Additionally, three to four relatively undisturbed samples were collected from each boring using a split-spoon sampler and brass liners to contain the sample. The samples were frozen on dry ice and wrapped in plastic for storage. Three relatively undisturbed samples from each borehole, representing the shallow, middle, and deep-hydrogeologic units (SHU, MHU, and DHU) will be analyzed for physical properties including porosity, bulk density, and grain size. For each fill area, one relatively undisturbed sample from each of the waste interval, shallow, middle, and deep-hydrogeologic units will have DNAPL mobility tested. Additionally, three to four samples from each site will be analyzed for pore fluid saturations using the Dean-Stark procedure. The chemical and physical properties analysis of all split spoon samples will be conducted by PTS Laboratories in California. The specific analyses conducted on each of the split spoon samples collected will be determined following review of the chemical analysis results of the soil samples.

Piezometer Installation

Piezometers were installed during week at A1-12, A1-6, A1-1, and A1-5. The piezometers were constructed to expose the screen to the bedrock core and the interval directly above bedrock in the DHU. Each boring was drilled approximately five feet into rock and the well was screened for 15 feet above total depth. Piezometers were constructed using 2-inch diameter stainless steel screen with a 0.010-inch aperture and 2-inch diameter stainless steel riser.

Piezometer construction proceeded by pouring sand directly into the borehole annulus around the well screen. Sand was poured to a depth approximately 2 feet above the top of the well screen, followed by a bentonite chip seal of at least 3 feet in thickness. The 6-inch override casing was retracted from the borehole as the filter pack and bentonite seal were placed. A cement-bentonite grout was used to fill the borehole annulus from the top of the bentonite seal to ground surface. No surface completions were installed during the week.

During the week, Philip Environmental placed concrete jersey barriers around the piezometers after installation to provide permanent guards from damage at each location.

Well Development

On October 7, GSI with the support of Philip Environmental began development of the piezometers that have been installed thus far at Sauget Area 1 sites as part of the Task 4 DNAPL Characterization and Remediation Study. Five piezometers were developed during the week: A1-11, A1-7, A1-10, A1-17, and A1-12. Piezometers will be developed in order from most likely to be 'clean' to 'dirty' based on field screening of the soil cuttings during drilling.

Following measurement of the static water level in the piezometer, well development proceeded by surging the well screen and pumping at least 300 gallons of groundwater from the well. Water quality parameters including pH, specific conductivity, temperature and turbidity were measured during development and monitored for stability. An odor was observed in the groundwater purged from piezometer A1-12. The water purged from each well at the end of development was noted to be clear with low turbidity.

Investigation-Derived Waste (IDW)

Solid IDW from each borehole was placed in 55-gallon drums, with soil cuttings from waste intervals placed in separate drums. Phillip Environmental transported IDW drums to the Judith Lane field facility, where solid IDW from the 'non-waste' intervals was transferred into a roll-off box. IDW from the waste intervals will be characterized separately. Liquid IDW used during drilling and well development was collected at each borehole and transferred to a 'frac-tank' located at the Judith Lane facility.

Health and Safety

Initial drilling at each borehole location within a waste/fill area commenced with all personnel donning Level C Personal Protective Equipment (PPE) including respirator and Tyvek® chemical retardant suits. An exclusion zone was established around the drill rig and sampling area within which Level C PPE was required.

The breathing zone was frequently monitored using a calibrated PID to check organic vapor concentrations throughout drilling operations. Additionally, a large fan was utilized to ventilate the drilling platform as an engineering control to minimize potential organic vapors in the breathing zone.

During the week, the Prosonic driller injured his finger when he caught his hand on a well riser. The injury required stitches.

Work Anticipated Next Week

Prosonic and GSI anticipate completing drilling activities during the coming week, with the remaining three boring locations (A1-13, A1-14, and A1-15) drilled at or downgradient of Site G. GSI will continue developing installed piezometers. Field activities will continue over the weekend of October 9-10. In the following weeks, GSI will complete developing the remaining piezometers. After at least a one week interval following well development, fieldwork for Task 5 of the DNAPL Characterization and Remediation Study will begin, including the NAPL survey of the 18 installed piezometers, and, if applicable, NAPL recovery tests.

TABLE 1
 Field Screening Tests and Soil Boring/Piezometer Installation Summary
 SA1 Weekly Summary Report, Week Ending October 8, 2004

ID	Site	Date Installed	Approx. Bedrock Depth	Screen Interval	Date Developed	Significant Observations	Odor	FLUTE TM Strip Tests	Sudan Dye Tests	Significant PID Readings
A1-3	Site H	Sept. 10	100'	100-115'		None	None to slight	All negative	All negative	331 ppm within waste at 8-10'
A1-2	Site H	Sept. 12	107'	98-113'		None	None to strong odor	All negative	3 positive results (either few red droplets or staining in jar) at 58-60', 63-65', and 68-70'	538 ppm within waste at 8-10' 50-52': 471 ppm, 58-60': 233 ppm
A1-16	Site G	Sept. 14	116'	106-121'		Black staining at ~27'	Odor within waste, slight odor up to 70'	All negative	4 positive results (either few red droplets or staining in jar) within waste at 3-5', and 8-15'	Readings between 50-100 ppm at 28-30, 43-45', and 63-65'
(Location near existing LNAPL well, EE-11)										
A1-11	Site I	Sept. 15	116'	106-121'	Oct. 7	None	None	All negative	1 positive result (red specks, adhered to sediment particles) at 103-105'	None
A1-8	Site I	Sept. 23	111'	102-119'		Oily film at some intervals. A sheen and/or dark brown to black droplets of oily residue visible in some intervals.	Odor observed throughout borehole	All negative	31 of 38 tests (81%) positively indicated oil in soil, (red film/droplets/stain or pink colored ball). Notably – between 0-10' (surface) and 107.5-111' (two intervals above bedrock) the results were negative.	Max. result (957 ppm) at 5-7.5' interval. 36 of 39 tests (92%) were >100 ppm. Notably – two intervals near total depth (105-110') had slightly lower results (61 and 67 ppm)
A1-18	Dwngr Site G	Sept. 24	115'	106-121'		None	Slight odor observed between 5-65'.	All negative	6 of 33 tests (18%) were positive. Results were marginally positive (slight pink color on ball).	Max. result (295 ppm) within waste at 7.5-10'. 11 of 42 results were >50 ppm, all between 5-45'.
A1-4	Site L	Sept. 25	110'	100'-115'		None	Slight odor observed between 27.5-30'.	All negative	All negative	136 ppm within waste at 12.5 to 15'

ID	Site	Date Installed	Approx. Bedrock Depth	Screen Interval	Date Developed	Significant Observations	Odor	FLUTE TM Strip Tests	Sudan Dye Tests	Significant PID Readings
A1-7	Site I	Sept. 26	111'	103'-118'	Oct. 7	None	None	All negative	3 of 22 tests (14%) were positive (all three with few red droplets in jar but only one with pink ball).	None
A1-10	Site I	Sept. 27	112'	104'-119'	Oct. 7	None	None	All negative	All negative	None
A1-9	Dwngr Site I	Sept. 29	111.5'	104'-119'		Dark oily streaks observed in water in 25-27.5' interval.	Odor observed from 25-82.5'.	All negative	8 of 30 tests (27%) were positive (red droplets and staining in jar, ball stained pink).	Max result (383 ppm) at 25-27.5' interval. 8 of 41 tests (20%) within soil boring were >100 ppm.
A1-17	Dwngr Site G	Sept. 30	NE	10'-25'	Oct. 7	None	Slight odor from 24.5-25'.	All negative	All negative	None
A1-12	Dwngr Site I	Oct. 5	112'	105-120'	Oct. 8	None	Slight odor observed largely from 45' to 112'	All negative	All negative	Readings of 30-120 ppm between ~35-70' Slightly elevated results above rock (10-60 ppm) between 102-112'
A1-6	Site I	Oct. 7	109'	103-118'		Oily film, smears or sheen in waste intervals up to ~35'. Sheen observed next to organic material at ~60' (charcoal) and ~72' (wood)	Slight odor observed throughout borehole ²	All negative	One positive result (red ball) at the 17.5-20' interval.	Max. result (978 ppm) at 30-32.5' interval. 19 of 34 tests (56%) were >50 ppm, generally at intervals between 15-70'.
A1-1	Site H	Oct. 8	106.5'	98.5-113.5'		None	Slight odor between ~15-20'	All negative	All negative	None
A1-5	Btwn Sites ¹	Oct. 8	109"	100-115'		None	None	All negative	All negative	None

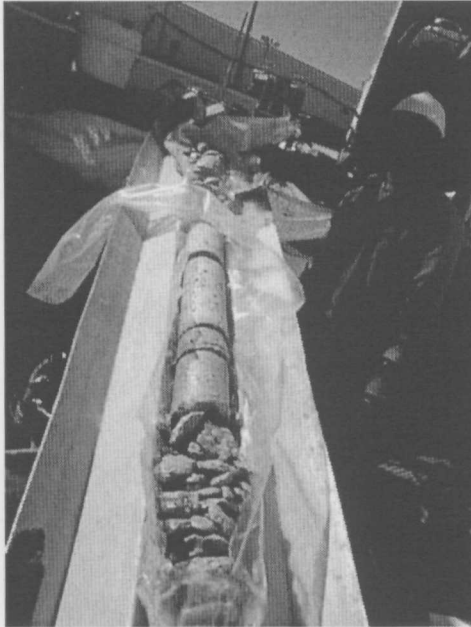
Notes:

All depths are in feet below ground surface

Dwngr – indicates well location is downgradient of the waste/fill area for each Site

¹ Boring is located between Sites G, H, and L, east of Dead Creek² No odor/olfactory observations in waste intervals due to Level C PPE (respirator).

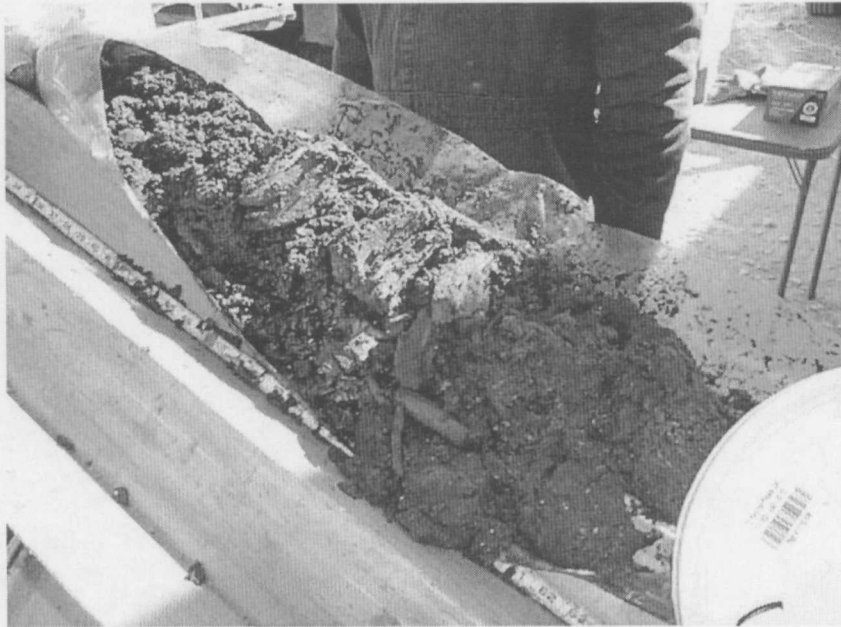
Photos from October 5, through October 8, 2004:



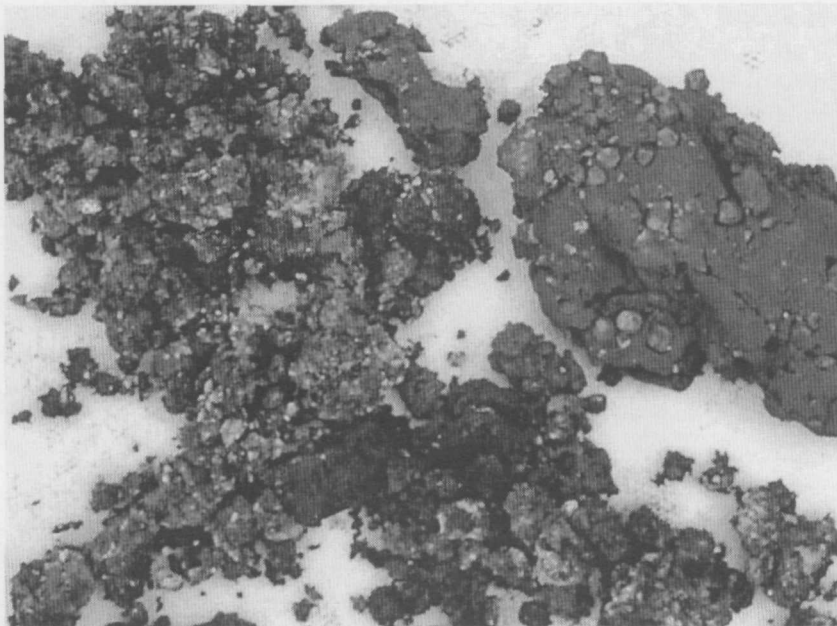
Rock core sampled from boring A1-12, downgradient of Site I (October 5, 2004).



An oily residue and smearing was observed within waste intervals (approximately 15-25 feet bgs) at boring A1-6, Site I (October 6, 2004).



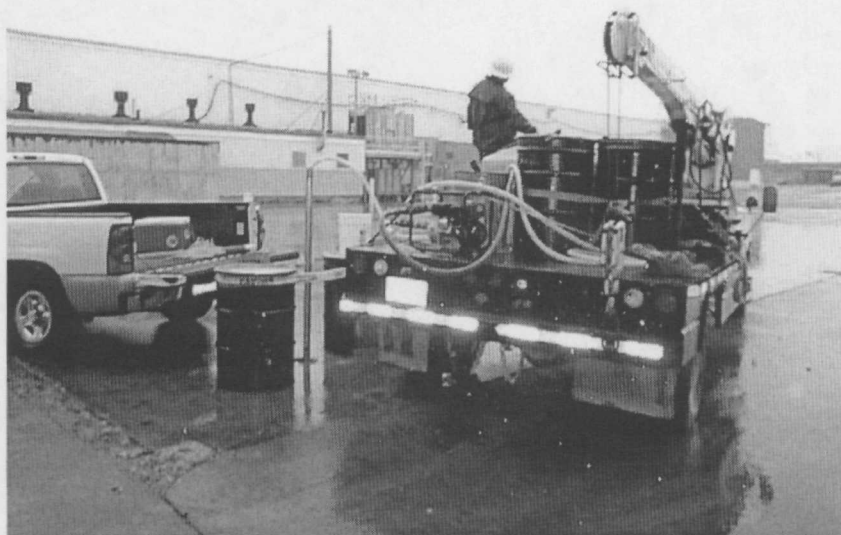
Wood debris was encountered at boring A1-6 at approximately 72 feet bgs (October 6, 2004).



Small pellets were observed in the waste interval at boring A1-1, Site H (October 7, 2004).



Preparing to install piezometer at location A1-1, Site H (October 7, 2004).



Developing well A1-12 downgradient of Site I (October 8, 2004).